

a layer of chalcogenide disposed over the layer of the second conductive material; and
a second line formed over the layer of chalcogenide.

REMARKS

In this Amendment, the Applicant has amended claims 1, 17-21, 26, 31 and 38. Claims 4, 22, 27, 34 and 41 have been cancelled and no new claims have been added. Accordingly, claims 1-3, 5-21, 23-26, 28-33, 35-40 and 42-44 remain pending in the Application. The amended claims with revision markings are set forth in Appendix A.

In the Office Action, claims 1-3, 5, 21, 23, 26, 28, 31-33, 35, 38-40 and 42 were rejected under 35 U.S.C. § 102(e) based on U.S. Patent No. 6,392,913 B1 issued to Sandhu (“the Sandhu reference”). Claims 2 and 17 were objected to under 37 CFR § 1.75 as being substantial duplicates of each other. The Applicant notes that claims 17-20 as originally filed erroneously depended from claim 1 instead of claim 16. This error has been corrected. Thus, the objection to claims 2 and 17 has been obviated. Claims 4, 6, 20, 22, 24, 25, 27, 29, 30, 34, 36, 37, 41, 43 and 44 were objected to as depending on a rejected base claim but were indicated to be allowable if rewritten in independent form.

The Applicant notes that there is some confusion regarding the status of independent claim 16 and dependent claims 17-19. On the summary page of the Office Action, claim 16 is indicated as being allowable (along with claims 8-15). However, the summary page lists claims 17-19 as rejected. The text of the Office Action does not list any of claims 16-19 as rejected on prior art

grounds (see Office Action, paragraph 3), but the detailed section of the rejection under Section 102 includes sections dealing with dependent claims 17 and 18 (see Office Action, paragraphs 9 and 10). Independent claim 16 is not discussed in the detailed section on the Section 102 rejection. Finally, the text of the Office Action that lists the allowed claims (paragraph 24) lists only claims 8-15 as being allowable. The Applicant has responded as though claims 16-20 are allowable because claim 16 clearly defines over the prior art. Clarification is respectfully requested if this assumption is not correct.

The Rejection Under 35 U.S.C. § 102

As set forth above, claims 1-3, 5, 21, 23, 26, 28, 31-33, 35, 38-40 and 42 were rejected under Section 102. The Applicant does not concede that the rejection under Section 102 is correct. Nonetheless, the Applicant has elected to amend independent claims 1, 21, 26, 31 and 38 to place the case in condition for allowance. Specifically, each independent claim has been rewritten to include language limiting the first conductive material to a material that “comprises one of aluminum, copper, nickel, and tungsten.” Dependent claims 4, 22, 27, 34 and 41, which were indicated as being allowable if rewritten in independent form, limited the first conductive material to a material that “comprises one of copper, nickel, and tungsten.” The Applicant submits that the inclusion of aluminum in this group does not render the claims unpatentable.

Accordingly, the Applicant respectfully asserts that the pending claims are allowable over the prior art. Favorable reconsideration of all pending claims and an indication of allowability thereof is respectfully requested.

If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

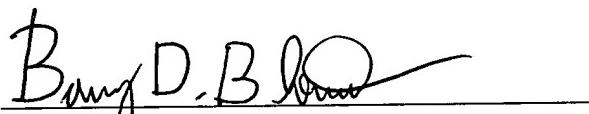
Payment of Fees

This response is timely filed and does not present claims that require payment of a fee at this time. Accordingly, the Applicant respectfully submits that no fees are due at the present time.

General Authorization for Extensions of Time

In accordance with 37 C.F.R. § 1.136, Applicants hereby provide a general authorization to treat this and any future reply requiring an extension of time as incorporating a request therefor. Furthermore, Applicants authorize the Commissioner to charge the appropriate fee for any extension of time to Deposit Account No. 13-3092; Order No. MICS:0061/FLE (00-0535).

Respectfully submitted,


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APPENDIX A

Amended Claims Shown with Revision Markings

1. (Once Amended) A memory cell comprising:

a first line formed over a substrate, the first line being formed of a first conductive

material that comprises one of aluminum, copper, nickel, and tungsten;

a layer of a second conductive material disposed over the first line, the second conductive

material being different from the first conductive material;

a layer of chalcogenide material disposed over the layer of the second conductive

material; and

a second line formed over the layer of chalcogenide material.

17. (Once Amended) The memory cell, as set forth in claim [1] 16, wherein the first

line is embedded in the substrate.

18. (Once Amended) The memory cell, as set forth in claim [1] 16, wherein the first

line is disposed in a window formed in a dielectric layer disposed over the substrate.

19. (Once Amended) The memory cell, as set forth in claim [1] 16, wherein the layer

of silver is deposited on the first line using an immersion plating technique.

20. (Once Amended) The memory cell, as set forth in claim [1] 16, wherein the

chalcogenide material comprises germanium selenide.

21. (Once Amended) A memory cell comprising:

a first layer of dielectric material disposed over a substrate, the first layer of dielectric material having a first window therein;

a first line disposed in the first window, the first line being formed of a first conductive material that comprises one of aluminum, copper, nickel, and tungsten;

a second layer of dielectric material disposed over the first layer of dielectric material and over the first line, the second layer of dielectric material having a second window therein, the second window exposing at least a portion of the first line;

a layer of a second conductive material disposed in the second window over the first line, the second conductive material being different from the first conductive material;

a layer of chalcogenide material disposed in the second window over the layer of the second conductive material; and

a second line formed over the layer of chalcogenide material.

26. (Once Amended) A memory cell comprising:

a first layer of dielectric material disposed over a substrate, the first layer of dielectric material having a first window therein;

a first line disposed in the first window, the first line being formed of a first conductive material that comprises one of aluminum, copper, nickel, and tungsten;

a second layer of dielectric material disposed over the first layer of dielectric material and over the first line;

a first layer of conductive material disposed over the second layer of dielectric material, the first layer of conductive material and the second layer of dielectric material

having a second window therein, the second window exposing at least a portion of the first line;
a layer of a second conductive material disposed in the second window over the first line, the second conductive material being different from the first conductive material;
a layer of chalcogenide material disposed in the second window over the layer of the second conductive material; and
a second line formed over the layer of chalcogenide material and over the first layer of conductive material.

31. (Once Amended) A memory comprising:
a memory array having a plurality of memory cells, each of the memory cells comprising:
a first line formed over a substrate, the first line being formed of a first conductive material that comprises one of aluminum, copper, nickel, and tungsten;
a layer of a second conductive material disposed over the first line, the second conductive material being different from the first conductive material;
a layer of chalcogenide disposed over the layer of the second conductive material; and
a second line formed over the layer of chalcogenide.

38. (Once Amended) An electronic device comprising:
a processor;
a memory operatively coupled to the processor, the memory comprising a memory array having a plurality of memory cells, each of the memory cells comprising:

a first line formed over a substrate, the first line being formed of a first conductive material that comprises one of aluminum, copper, nickel, and tungsten;

a layer of a second conductive material disposed over the first line, the second conductive material being different from the first conductive material;

a layer of chalcogenide disposed over the layer of the second conductive material; and
a second line formed over the layer of chalcogenide.